



# Electronic Information Disclosure Statement

## Microneedle Devices and Methods of Manufacture and Use Thereof

Application:   
10/010723

Confirmation: 4309

Applicant(s): Mark Allen

Docket Number: BVTP-P04-506

Group Art Unit: 3763









Examiner: Thompson, Kathryn L.

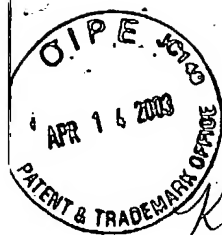
search string: ( 4320758 or 4664651 or 4671288 or 4703761 or 4775361 or 5035711 or 5147355 or 5599302 or 5605662 or 5611942 or 5632957 or 5758505 or 5807375 or 5848991 or 5852495 or 5855801 or 5858188 or 5865786 or 5865796 or 5876675 or 5883211 or 5885211 or 5899880 or 5911223 or 5919159 or 20010053891 ).pn.

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### US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

init	Citation No.	Patent Number	Date	Bar Code	Patentee	Class	Subclass
	P01	4320758	1982-03-23		Eckenhoff et al.		
	P02	4664651	1987-05-12		Weinsbenker et al.		
	P03	4671288	1987-06-09		Gough		
	P04	4703761	1987-11-03		Rodion et al.		



P05	4775361	1988-10-04	Jacques et al.
P06	5035711	1991-07-30	Aoki et al.
P07	5147355	1992-09-15	Friedman et al.
P08	5599302	1997-02-04	Lilley et al.
P09	5605662	1997-02-25	Heller et al.
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P13	5807375	1998-09-15	Gross et al.
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P20	5876675	1999-03-12	Kennedy
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P22	5885211	1999-03-23	Eppstein et al.
P23	5899880	1999-05-04	Bellhouse et al.

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P24	5911223	1999-06-15		Weaver et al.
P25	5919159	1999-07-06		Lilley et al.

## Published Applications

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init	Citation No.	Patent Number	Date	Bar Code	Patentee	Class	Subclass
740	U01	20010053891	2001-12-20		Ackley		

## Remarks

(Remarks are not for responding to an office action.)

This is Part One of a two-part Information Disclosure Statement. Part Two, citing non-U.S. Patent art, was filed this same day via First Class Mail. While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR 1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such. In accordance with 37 CFR 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR 1.56(a) exists. Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents should one or more of the documents be applied against the claims of the present application.

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Substitute for form 1449A/PTO			Complete if Known		
			Application Number	10/010723	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT  (use as many sheets as necessary)			Filing Date	December 6, 2001	
			First Named Inventor	Mark G. Allen	
			Art Unit	3763	
			Examiner Name	Thompson, Kathryn L.	
Sheet	1	of	4	Attorney Docket Number	BVTP-P04-506

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
KJ	AA	2,893,392	07/07/1959	Wagner et al.	
	AB	3,034,507	05/15/1962	McConnell et al.	
	AC	3,086,530	04/23/1963	Groom	
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FOREIGN PATENT DOCUMENTS					
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		Country Code <sup>2</sup> -Number <sup>4</sup> -Kind Code <sup>3</sup> (if known)			
KAY	BQ	EP 0497620	05/08/1992	Carnegie-Mellon University	
	BR	EP 0 652 600	5/1995		
	BS	JP 7132119	05/23/1995	Nikon Corp.	
	BT	JP 7196314	08/01/1995	Maruo Calcium Co., Ltd.	
	BU	WO 93/17754	09/16/1993	Elan Medical	
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	BY	WO 97/07734	03/06/1997	Spectrx, Inc.	
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	CB	WO 98/28037	07/02/1998	Alza Corporation	
	*CC	WO 00/48669	08/24/2000	Biovalve Technologies	
	*CD	WO 00/74763	12/14/2000	Georgia Tech Research	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See attached Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the application number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
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	*CH	Chun, K. et al. Fabrication of Array of Hollow Microcapillaries Used for Injection of Genetic Materials into Animal/Plant Cells. Jpn. J. Appl. Phys. 38, 279-281 (1999).	
	*CI	Clarke, M.S.F. and McNeil, P.L. Syringe loading introduces macromolecules into living mammalian cell cytosol. J. Cell. Sci. 102, 533-541 (1992).	
	CJ	Despont, M. et al. High-Aspect-Ratio, Ultrathick, Negative-Tone Near-UV Photoresist for Mems Applications. IEEE 0-7803-3744-1/97 (1997).	
	CK	Edell, D.J. et al. Factors Influencing the Biocompatibility of Insertable Silicon Microshafts in Cerebral Cortex. IEEE Transactions on Biomedical Engineering 39, 635-643 (1992).	
Examiner Signature	Kathryn L. Thompson		Date Considered
			04/12/2004



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*CL	Eleventh Annual International Workshop on Micro Electro Mechanical Systems, Heidelberg, Germany (25-29 Jan. 1998). IEEE Catalog No. 98CH36176
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CN	Frazier, A.B. et al. Two Dimensional Metallic Microelectrode Arrays for Extracellular Stimulation and Recording of Neurons. IEEE 0-7803-0957 pp. 195-200 (Feb. 1993).
CO	Haga et al. Transdermal Iontophoretic delivery of insulin using a photoetched microdevice. J. Controlled Release 43, 139-149 (1997).
CP	Hashmi, S. et al. Genetic Transformation of Nematodes Using Arrays of Micromechanical Piercing Structures. BioTechniques 19, 766-770 (Nov. 1995).
CQ	Henry et al. Microfabricated Microneedles: A Novel Method to Increase Transdermal Drug Delivery. J. Pharm. Sci. 87, 922-925 (1998).
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CS	Hoffert, S.P. Transcutaneous Methods Get Under the Skin. The Scientist 12, no. 16 (17 Aug. 1998).
*CT	Infiltrator Intramural Drug Delivery: A New Generation of Drug Delivery Catheters from InterVentional Technologies, Inc., San Diego, CA (1997).
CU	Jaeger, R.C. Introduction to Microelectronic Fabrication in the Addison-Wesley Modular Series on Solid State Devices, G.W. Neudeck and R.F. Pierret, eds. Vol. 5, Addison-Wesley Publishing Co., Inc. (May 1993).
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CX	Langer, R. Drug delivery and targeting. Nature 392 Supp, 5-10 (30 April 1998).
CY	Lehmann, V. Porous Silicon - A New Material for MEMS. IEEE ISBN: 0-7803-2985-6/96 (1996).
CZ	Lin, L. et al. Silicon Processed Microneedles. The 7 <sup>th</sup> International Conference on Solid-State Sensors and Actuators (1993).
DA	Martin, C.R. et al. Template Synthesis of Organic Microtubules. J. Am. Chem. Soc. 112, 8976-8977 (1990).

Examiner Signature	Kathryn L. Thompson	Date Considered	09/12/2004
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DC	101 Uses for Tiny Tubules. Science 247 (23 March 1990).
DD	<u>Percutaneous Absorption</u> , R.L. Bronaugh and H.I. Maibach, eds. Marcel Dekker, Inc., New York (1989).
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DG	Quan, M. Plasma etch yields microneedle arrays. Electronic Eng. Times, p.63 (13 July 1996).
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DK	Single-crystal whiskers. Biophotonics Int'l, p. 64 (Nov./Dec. 1996).
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DO	Weber, L. et al. Micro molding - a powerful tool for the large scale production of precise microstructures. SPIE No. 0-8194-2277-0/96, Vol. 2879, p.156-167 (1996).
DP	Zuska, P. Microtechnology Opens Doors to the Universe of Small Space. MD&DI (1997).

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